

IN THE CLAIMS

Please amend claims 1, 4-6, 8, 11-13, 15-29, 31-35, and 37-40 as indicated below. The following listing of the claims and their current status is provided in accordance with 37 C.F.R. §1.121.

1. (currently amended) A method for imaging an organ, comprising the steps of:

acquiring a set of motion data for ~~[[two]]~~ one or more organs ~~from at least one of~~
using one or more types of electrical sensors or one or more types of non-electrical sensors;
validating the set of motion data using another set of motion data derived from a
dataset acquired using an imager;

processing the set of motion data to extract two or more prospective gating points
for an organ of interest; and

acquiring a set of image data representative of the organ of interest using the two or
more prospective gating points using the imager.
2. (original) The method, as recited in claim 1, further comprising the steps of:

reconstructing the set of image data to generate a set of reconstructed data; and

generating an image from the set of reconstructed data.
3. (previously presented) The method, as recited in claim 2, wherein

generating the image comprises fusing a set of image data representative of structure with at
least one of a set of image data representative of motion or a set of image data
representative of electrical activity.
4. (currently amended) The method, as recited in claim 1, wherein at least one
of the one or more ~~the electrical sensors or the non-electrical sensors~~ ~~[[are]]~~ is activated in
accordance with a set of positional data acquired by one or more positional sensors.

5. (currently amended) The method, as recited in claim 1, wherein the one or more sensors ~~each type of electrical sensor comprises~~ comprise two or more electrical sensors of the same type.

6. (currently amended) The method, as recited in claim 1, wherein the one or more sensors ~~each type of non-electrical sensor comprises~~ comprise at least one type of non-electrical sensor ~~one or more non-electrical sensors of the type~~.

7. (original) The method, as recited in claim 1, wherein the set of motion data is at least partially acquired from a set of pre-acquisition image data.

8. (currently amended) A method, for imaging an organ, comprising the steps of:

acquiring a set of motion data for one or more organs ~~[[from]]~~ using at least ~~two of one or more types of electrical sensor sensors~~ and at least one ~~or more types of non-electrical sensor sensors~~;

processing the set of motion data to extract two or more prospective gating points for an organ of interest and to extract one or more motion compensation factors; and

acquiring a set of image data representative of the organ of interest using the two or more prospective gating points.

9. (original) The method, as recited in claim 8, further comprising the steps of: reconstructing the set of image data to generate a set of reconstructed data; and generating an image from the set of reconstructed data.

10. (previously presented) The method, as recited in claim 9, wherein generating the image comprises fusing a set of image data representative of structure with at least one of a set of image data representative of motion or a set of image data representative of electrical activity.

11. (currently amended) The method, as recited in claim 8, wherein at least one of the electrical ~~sensors~~ or ~~the~~ non-electrical sensors ~~[[are]]~~ is activated in accordance with a set of positional data acquired by one or more positional sensors.

12. (currently amended) The method, as recited in claim 8, wherein the at least one ~~each type of~~ electrical sensor comprises two or more electrical sensors of the same type.

13. (currently amended) The method, as recited in claim 8, wherein the at least one ~~each type of~~ non-electrical sensor comprises one or more types of non-electrical sensors ~~of the type~~.

14. (original) The method, as recited in claim 8, wherein the set of motion data is at least partially acquired from a set of pre-acquisition image data.

15. (currently amended) One or more computer readable storage media having executable code stored thereon for imaging an organ, the executable code comprising: A ~~computer program, provided on one or more computer readable media, for imaging an organ, comprising:~~

a routine for acquiring a set of motion data for ~~[[two]]~~ one or more organs using ~~from at least one of one or more types of electrical sensors or one or more types of non-electrical sensors;~~

a routine for validating the set of motion data using another set of motion data derived from a dataset acquired using an imager;

a routine for processing the set of motion data to extract two or more prospective gating points for an organ of interest; and

a routine for acquiring a set of image data representative of the organ of interest using the two or more prospective gating points using the imager.

16. (currently amended) The one or more computer readable storage media,
~~The computer program,~~ as recited in claim 15, further comprising:

a routine for reconstructing the set of image data to generate a set of reconstructed data; and

a routine for generating an image from the set of reconstructed data.

17. (currently amended) The one or more computer readable storage media,
~~The computer program,~~ as recited in claim 16, wherein the routine for generating the image fuses a set of image data representative of structure with at least one of a set of image data representative of motion or a set of image data representative of electrical activity.

18. (currently amended) The one or more computer readable storage media,
~~The computer program,~~ as recited in claim 15, wherein the routine for acquiring the set of motion data activates at least one of the ~~electrical sensors or the non-electrical~~ one or more sensors in accordance with a set of positional data acquired by one or more positional sensors.

19. (currently amended) The one or more computer readable storage media,
~~The computer program,~~ as recited in claim 15, wherein the routine for acquiring the set of motion data acquires at least part of the set of motion data from a set of pre-acquisition image data.

20. (currently amended) One or more computer readable storage media having
executable code stored thereon for imaging an organ, the executable code comprising: A
~~computer program, provided on one or more computer readable media, for imaging an~~
~~organ, comprising:~~

a routine for acquiring a set of motion data for one or more organs [[from]] using at least ~~two of one or more types of~~ one electrical sensor sensors and at least one ~~or more types of~~ non-electrical sensor sensors;

a routine for processing the set of motion data to extract two or more prospective gating points for an organ of interest and to extract one or more motion compensation factors; and

a routine for acquiring a set of image data representative of the organ of interest using the two or more prospective gating points.

21. (currently amended) The one or more computer readable storage media, ~~The computer program~~ as recited in claim 20, further comprising:

a routine for reconstructing the set of image data to generate a set of reconstructed data; and

a routine for generating an image from the set of reconstructed data.

22. (currently amended) The one or more computer readable storage media, ~~The computer program~~ as recited in claim 21, wherein the routine for generating the image fuses a set of image data representative of structure with at least one of a set of image data representative of motion or a set of image data representative of electrical activity.

23. (currently amended) The one or more computer readable storage media, ~~The computer program~~, as recited in claim 20, wherein the routine for acquiring the set of motion data activates at least one of the electrical ~~sensors~~ or the non-electrical sensors in accordance with a set of positional data acquired by one or more positional sensors.

24. (currently amended) The one or more computer readable storage media, ~~The computer program~~, as recited in claim 20, wherein the routine for acquiring the set of motion data acquires at least part of the set of motion data from a set of pre-acquisition image data.

25. (currently amended) An imaging system comprising:
an imager configured to generate a plurality of signals representative of a region of interest;
data acquisition circuitry configured to acquire the plurality of signals;
data processing circuitry configured to process the plurality of signals;
system control circuitry configured to operate at least one of the imager and the data acquisition circuitry;
an operator workstation configured to communicate with the system control circuitry and to receive the processed plurality of signals from the data processing circuitry;
and
a sensor-based motion measurement system configured to measure electrical or non-electrical activity indicative of the motion of two or more organs within the region of interest using one or more sensors to obtain a set of motion data;
wherein the data processing circuitry is further configured to validate the set of motion data using another set of motion data derived from a dataset acquired by the imager.

26. (currently amended) The imaging system as recited in claim 25, wherein the one or more sensors comprises one or more non-electrical sensors, and wherein the imaging system further comprising comprises one or more positional sensors configured to activate the one or more non-electrical sensors for the sensor-based motion measurement system based on the position of the one or more non-electrical sensors relative to the imager.

27. (currently amended) The imaging system as recited in claim 25, wherein the one or more sensors comprises two or more electrical sensors, and wherein the imaging system further comprising comprises one or more positional sensors configured to activate the two or more electrical sensors for the sensor-based motion measurement system based on the position of the two or more electrical sensors relative to the imager.

28. (currently amended) The imaging system as recited in claim 25, wherein the one or more sensors comprises two or more electrical sensors, and wherein the sensor-based motion measurement system is configured to measure electrical activity indicative of the motion of the two or more organs via the two or more electrical sensors.

29. (currently amended) The imaging system as recited in claim 25, wherein the one or more sensors comprises one or more non-electrical sensors, and wherein the sensor-based motion measurement system is configured to measure non-electrical activity indicative of the motion of the two or more organs via the one or more non-electrical sensors.

30. (original) The imaging system as recited in claim 29, wherein the one or more non-electrical sensors comprise accelerometers, optical markers, displacement sensors, force sensors, ultrasonic sensors, strain gauges, photodiodes, and pressure sensors.

31. (currently amended) An imaging system comprising:
an imager configured to generate a plurality of signals representative of a region of interest;
data acquisition circuitry configured to acquire the plurality of signals;
data processing circuitry configured to process the plurality of signals;
system control circuitry configured to operate at least one of the imager and the data acquisition circuitry based at least partially upon one or more motion compensation factors derived from a set of motion data describing the motion of two or more organs within a region of interest;
an operator workstation configured to communicate with the system control circuitry and to receive the processed plurality of signals from the data processing circuitry;
and

two or more sensor-based motion measurement systems that contribute to the set of motion data, wherein the two or more sensor-based motion measurement systems include an electrical sensor-based motion measurement system, ~~wherein each sensor-based motion measurement system is configured to measure electrical or non-electrical activity indicative of the motion of the two or more organs within the region of interest~~ and a non-electrical sensor-based motion measurement system configured to measure non-electrical activity indicative of the motion of the two or more organs.

32. (currently amended) The imaging system as recited in claim 31, further comprising one or more positional sensors configured to activate one or more non-electrical sensors of ~~[[a]]~~ the non-electrical sensor-based motion measurement system based on the position of ~~[[the]]~~ one or more non-electrical sensors relative to the imager.

33. (currently amended) The imaging system as recited in claim 31, further comprising one or more positional sensors configured to activate two or more electrical sensors of ~~[[an]]~~ electrical sensor-based motion measurement system based on the position of ~~[[the]]~~ two or more electrical sensors relative to the imager.

34. (currently amended) The imaging system as recited in claim 31, wherein the electrical ~~at least one~~ sensor-based motion measurement system is configured to measure electrical activity indicative of the motion of the two or more organs via two or more electrical sensors.

35. (currently amended) The imaging system as recited in claim 31, wherein the non-electrical ~~at least one~~ sensor-based motion measurement system is configured to measure non-electrical activity indicative of the motion of the two or more organs via one or more non-electrical sensors.

36. (original) The imaging system as recited in claim 35, wherein the one or more non-electrical sensors comprise accelerometers, optical markers, displacement sensors, force sensors, ultrasonic sensors, strain gauges, photodiodes, and pressure sensors.

37. (currently amended) An imaging system, comprising:
means for acquiring a set of motion data for ~~[[two]]~~ one or more organs using one or more sensors ~~from at least one of one or more types of electrical sensors or one or more types of non-electrical sensors;~~
means for validating the set of motion data using another set of motion data derived from a dataset acquired by an imager;
means for processing the set of motion data to extract two or more prospective gating points for an organ of interest; and
means for acquiring a set of image data representative of the organ of interest using the two or more prospective gating points.

38. (currently amended) An imaging system, comprising:
means for acquiring a set of motion data for one or more organs ~~[[from]]~~ using at least ~~[[two]]~~ one electrical sensor and at least one ~~of one or more types of electrical sensors or one or more types of non-electrical sensor sensors;~~
means for processing the set of motion data to extract two or more prospective gating points for an organ of interest and to extract one or more motion compensation factors; and
means for acquiring a set of image data representative of the organ of interest using the two or more prospective gating points.

39. (currently amended) An imaging system comprising:
an imager configured to generate a plurality of signals representative of a region of interest;
data acquisition circuitry configured to acquire the plurality of signals;
data processing circuitry configured to process the plurality of signals;
system control circuitry configured to operate at least one of the imager and the data acquisition circuitry based upon two or more prospective gating points derived from a set of motion data describing the motion of two or more organs within the region of interest;
an operator workstation configured to communicate with the system control circuitry and to receive the processed plurality of signals from the data processing circuitry;
and
a sensor-based motion measurement system configured to measure electrical or non-electrical activity indicative of the motion of at least one of the two or more organs within the region of interest using one or more sensors to contribute to the set of motion data;
wherein the data processing circuitry is further configured to validate the set of motion data using another set of motion data derived from a dataset acquired by the imager.

40. (currently amended) An imaging system comprising:
an imager configured to generate a plurality of signals representative of a region of interest;
data acquisition circuitry configured to acquire the plurality of signals;
data processing circuitry configured to process the plurality of signals;
system control circuitry configured to operate at least one of the imager and the data acquisition circuitry based upon two or more prospective gating points and one or more motion compensation factors derived from a set of motion data describing the motion of two or more organs within a region of interest;

derived from a set of motion data describing the motion of at least one organ within the region of interest;

an operator workstation configured to communicate with the system control circuitry and to receive the processed plurality of signals from the data processing circuitry; and

a sensor-based motion measurement system configured to contribute to the set of motion data by measuring electrical or non-electrical activity indicative of the motion of the at least one organ within the region of interest using ~~[[via]]~~ at least one ~~two of one or more~~ ~~types of electrical~~ sensor ~~sensors or one or more types of~~ and at least one non-electrical sensor ~~sensors~~.